

## Assessment of Knowledge, Awareness, and Behavior of Folic Acid Use among Females during The Childbearing Period in Tabuk City-2017

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### ABSTRACT

**Background:** A balanced diet is very important for pregnant women, which consists of proteins, carbohydrates, vitamins, minerals and fats. Supplements do not replace a healthy diet but rather ensure that a woman is taking enough daily nutrients. Folic acid (FA) is a B vitamin, which is found in different foods but can be best got through a multi-vitamin. Things such as leafy green vegetables, fortified cereals, orange juice and strawberries are just some of many foods that contain folic acid. Congenital anomalies affect an evaluated 3% of newborns worldwide. Nearly 50 years ago, it was found that the B-vitamin folic acid play a role in improving normal embryonic development. This study done to investigate the level of awareness among female college students on the importance of preconception folic acid supplementation in preventing neural tube defects (NTDs).

**Methods:** We have conducted a descriptive cross-sectional study in Tabuk city population, Saudi Arabia. A self-administered questionnaire requires information about Knowledge, awareness, perception of Folic Acid importance and use among females during the childbearing period, has been filled by participants.

**Results:** In this study, there was a significant relation between age and if ever heard about folic acid ( $p < 0.001$ ), and for work and if ever heard about folic acid ( $p < 0.001$ ). Those who heard about folic acid were ninety four, and the majority of them aged from eighteen to thirty years (65.9%). Among those who heard about folic acid, the majority were university graduated (73.4%).

**Conclusion:** We need to apply more efforts to increase the knowledge and emphasize on the importance of the use of folic acid among females in Tabuk city.

**Keywords:** folic acid, awareness, dose, deficiency, complications.

### INTRODUCTION

A balanced diet is very important for pregnant women. It consists of proteins, carbohydrates, vitamins, minerals and fats. It is the best way to receive nutrients, but vitamin supplements can also be beneficial. Pregnant women should only take vitamin supplements on a doctor recommendation. Supplements do not replace a healthy diet but rather ensure that a woman is taking enough daily nutrients. Vitamin supplements work best when taken as part of a healthy diet and not as a substitute for a healthy diet<sup>(1)</sup>.

Folic Acid is a B vitamin, which is found in different foods but can be best got through a multi-vitamin. Things such as leafy green vegetables, fortified cereals, orange juice and strawberries are just some of many foods that contain folic acid. These foods alone may not contain the entire recommended daily allowance of 400 mcg, since some of the folate can be reduced through cooking it<sup>(2,3,4)</sup>. A review has been conducted and its main objective was on the saving of folate as folic acid or 5-MTHF (with or without other vitamins and minerals) in the periconceptional period (prior to conception and in early pregnancy, before 12 weeks' gestation) to reduce the occurrence of neural tube defects (NTDs) and other birth defects<sup>(5)</sup>. Congenital anomalies affect an evaluated 3% of newborns worldwide. Nearly 50 years ago, it was found that

the B-vitamin folic acid plays a role in improving normal embryonic development<sup>(6)</sup>. For low risk pregnant, current recommendations from the National Institute of Clinical Excellence in the UK<sup>(7)</sup>, recommends 400 µg of FA daily, starting before pregnancy, continuing for the first 12 weeks of pregnancy. In high risk patients, that is, those who have had a previous child with an NTD, or for women taking certain anticonvulsants, 4-5 mg is recommended<sup>(8)</sup>. For those at intermediate risk of an NTD, including those with type 1 diabetes, epilepsy, obesity, a family history of NTDs, those belonging to certain ethnic or religious groups, for example, Sikhs in British, Columbia, and those who do not comply with medication or healthy diets, as well as those who take alcohol, use tobacco or recreational drugs, the Society of Obstetricians and Gynecologists in Canada also recommends that 4-5 mg FA should be started 3 months before pregnancy and continued 10-12 weeks post conception. After this, a mother may switch to a lower dose (0.4-1.0 mg) for the remaining part of the pregnancy and continue during breastfeeding<sup>(9)</sup>.

### METHOD

We have conducted a descriptive cross-sectional study in Tabuk city population, Saudi Arabia. The study was conducted during the period from June to November 2017. The participants were

female and they were selected by random sampling. The total sample obtained was 101. All the pupils were approached to obtain the desired sample size. A self-administered questionnaire requires information about Knowledge, awareness, perception of folic acid importance and use among females during the childbearing period, has been filled by participants. A letter that explains the objectives of the study and asks for participants consent was sent with the questionnaire.

The questionnaire responses were analyzed using the Statistical Package for the Social Science (SPSS Inc. Chicago, IL, USA) version 23. Categorical variables were described by frequencies and percentages. Descriptive analysis involving Chi-square test was used to test significance of association between categorical variables. The level of significance was set at  $P < 0.05$ .

Pupils were asked to give their written consents before participation in the study. **The study was done after approval of ethical board of King Abdulaziz university.**

## RESULTS

**Table 1** shows general characteristics of the participants. Participants were classified into three categories by age: from 18 to 30 years (68.3%), from 31 to 40 years (26.7%), and from 41 to 45 years (5%). (96%) of them were Saudi, and the majority were university graduates (75.2%). (82.2%) of them were married.

**Table 2** shows number of children, current pregnancy, if current pregnancy was planned or not, and miscarriages of participants. (36.6%) of them had no children, (35.6%) had one or two children, (21.8%) had three or four children, and only (6%) had five children or more. (56.4%) of participants were pregnant, and (31.6%) of them had planned pregnancy. (70.3%) of participants denied any previous miscarriages, (17.8%) of them had only one miscarriage, (8.9%) had two miscarriages, and (3%) had three miscarriages or more.

**Table 3** shows the knowledge of folic acid among women. (93.1%) of them heard about folic acid. (31.7%) of participants knew that folic acid is a vitamin-B, and the remaining either they did not know it (27.7%), or they gave a wrong answer (40.6%). Regarding the importance of folic acid supplements before or during pregnancy, (41.6%) thought it is important for red blood cells production, (54.5%) thought it is important because of neural tube formation and brain and spinal cord growth, and (58.4%) thought it is important because it decreases miscarriage and preterm labor.

Knowledge of complications of folic acid deficiency prior to or in early pregnancy were somewhat low, women who knew that folic acid deficiency will lead to neural tube defects were (49.5%), and those who knew that its deficiency will lead to anemia were (52.5%). (58.4%) of participants took folic acid supplements during previous pregnancies. When they were asked about when to take folic acid for effective prevention of fetus malformations, they answered as follows: in first trimester (32.7%), 3 months before pregnancy and in first trimester (48.5%), do not know (14.8%), and it is not necessary (4%). Regarding the knowledge about natural sources of folate, (36.6%) did not know the sources of folate. Participants knew the importance of folic acid from a doctor (49.5%), family member (24.8%), social media (18.8%), or friend (6.9%). Almost the majority of participants did not know the dose of folic acid required daily for a woman planning to conceive or for a pregnant woman (90%), and only (4%) knew the required dose.

**Table 4** shows significant relation between diabetes mellitus and the dose of folic acid required daily in woman with diabetes and pregnant or planning to conceive ( $p < 0.01$ ). Only one woman had diabetes mellitus and she thought that the folic acid dose required daily is 400 micrograms. Those who had no diabetes mellitus, (91%) of them did not know the daily dose of folic acid.

**Table 5** shows relation between knowledge of folic acid in relation to independent variables: age ( $p < 0.01$ ), work ( $p < 0.01$ ), education ( $p > 0.01$ ), number of children ( $p > 0.01$ ), number of miscarriages ( $p > 0.01$ ), and current pregnancy ( $p > 0.01$ ). Those who did not heard about folic acid were seven, and all of them aged from eighteen to thirty years. Those who heard about folic acid were ninety four, and the majority of them aged from eighteen to thirty years (65.9%). Among those who heard about folic acid, the majority were university graduated (73.4%). In relation to work, from who heard about folic acid, (57.4%) were housewives, (30.9%) were students, (4.3%) were health care workers, and (5.3%) were teachers. Those who heard about folic acid with no children were (34%), and those who heard about folic acid with one or two children were (36.2%). In the same context, those who heard about folic acid without any past miscarriage were (68.1%), and those who heard about folic acid with only one time miscarriage were (19.1%). From those who heard about folic acid, (56.4%) of them were pregnant, and (43.6%) were not pregnant. From those who did not heard about folic acid, (57.1%) of them were pregnant, and (42.9%) were not pregnant.

**Table 1: General characteristics (n=101)**

<b>Character</b>		
<b>Age</b>	From 18 to 30(n(%))	69(68.3%)
	From 31 to 39(n(%))	27(26.7%)
	From 40 to 45(n(%))	5(5%)
<b>Nationality</b>	Saudi (n (%))	97 (96%)
	Non-Saudi (n (%))	4 (4%)
<b>Education</b>	Basic education (n (%))	2 (2%)
	Secondary (n (%))	23 (22.8%)
	Graduated (n (%))	76 (75.2%)
<b>Income</b>	Less than 5000 SR/month (n (%))	41 (40.6%)
	From 5000 – 20000 SR/month (n (%))	57 (56.4%)
	More than 20000 SR/month (n (%))	3 (3%)
<b>Work</b>	Officer	2(2%)
	Housewife	54(53.5%)
	Health worker	4(4%)
	Student	36(35.6%)
	Teacher	5(5%)
<b>Marital status</b>	Yes	83(82.2%)
	No	18(17.8%)

**Table-2: Number of children, pregnancy and if planned, and miscarriages**

<b>Character</b>		
<b>Number of children</b>	No children (n(%))	37(36.6%)
	From 1 to 2 children (n(%))	36(35.6%)
	From 3 to 4 children (n(%))	22(21.8%)
	More than 5 children (n(%))	6(6%)
<b>Pregnancy</b>	Yes (n (%))	57 (56.4%)
	No (n (%))	44 (43.6%)
<b>Planned pregnancy</b>	Yes (n (%))	18 (31.6%)
	No (n (%))	39(68.4%)
<b>Miscarriages</b>	None (n (%))	71 (70.3%)
	Only 1 (n (%))	18 (17.8%)
	2 times	9(8.9%)
	3 times or more	3(3%)

**Table-3: Knowledge, perception, and behavior of folic acid use**

Character		Frequency	%
<b>Heard about folic acid</b>	Yes	94	93.1%
	No	7	6.9%
<b>Folic acid is</b>	Mineral	37	36.6%
	Vitamin B	32	31.7%
	Vitamin C	3	3%
	Vitamin E	1	1%
	Do not know	28	27.7%
<b>Folic acid is important because:</b>	Red Blood Cells production	42	41.6%
	Neural tube formation and brain and spinal cord growth	55	54.5%
	Decreases miscarriage and preterm labor	59	58.4%
<b>Folic acid deficiency leads to</b>	Neural tubal defect	50	49.5%
	Anemia	53	52.5%
<b>Women who took folic acid in the previous pregnancy</b>		59	58.4%
<b>When to take folic acid for effective prevention of fetus malformations?</b>	First trimester	33	32.7%
	3 months before pregnancy and first trimester	49	48.5%
	Do not know	15	14.8%
	Not necessary	4	4.0%
<b>Sources of folate</b>	Legumes	1	1%
	Grains	3	3%
	Vegetables	16	15.8%
	Fruits	3	3%
	All of the above	41	40.6%
	Do not know	37	36.6%
<b>From who you heard about importance of folic acid?</b>	Family member	25	24.8%
	Doctors	50	49.5%
	Social media	19	18.8%
	Friend	7	6.9%
<b>What is the dose of folic acid required daily for a woman planning to conceive or for a pregnant woman</b>	4 mg	6	6%
	400 umg	4	4%
	Do not know	91	90%

**Table-4: knowledge of the recommended daily of folic acid daily among participants**

at is the dose of folic acid required daily for oman planning to conceive or a pregnant	Had Diabetes Mellitus		p<0.01
	Yes n=1	No n=100	
4 mg	0%	6%	
400 umg	100%	3%	
Do not know	0%	91%	

**Table-5: Participants who ever heard about folic acid among independent variables**

Character	Heard about folic acid		p-value
	Yes n=94	No n=7	
<b>Age</b>			
From 18-30 years	65.9%	100%	
From 31-40 years	28.7%	0%	
From 40-45 years	5.3%	0%	<b>&lt;0.001</b>
<b>Education</b>			
Basic education	2.2%	0%	
Secondary	24.5%	0%	<b>&gt;0.05</b>
Graduated	73.4%	100%	
<b>Work</b>			
Officer	2.1%	0.0%	
Housewife	57.4%	0.0%	
Health worker	4.3%	0.0%	
Student	30.9%	100.0%	
Teacher	5.3%	0.0%	<b>&lt;0.001</b>
<b>Number of children</b>			
No children	34%	71.4%	
From 1 to 2 children	36.2%	28.6%	
From 3 to 4 children	23.4%	0%	
More than 5 children	6.4%	0%	<b>&gt;0.05</b>
<b>Miscarriages</b>			
non	68.1%	100%	
Only 1time	19.1%	0%	
2 times	9.6%	0%	
3 times or more	3.2%	0%	<b>&gt;0.05</b>
<b>Pregnancy</b>			
Yes	56.4%	57.1%	
	43.6%	42.9%	<b>&gt;0.05</b>

## DISCUSSION

In this study, (93.1%) of participants heard about folic acid. A study done about awareness and use of folic acid among pregnant women in Taipei showed nearly (90%) of the women reported that they had heard about folic acid<sup>(10)</sup>. Another study showed approximately two-thirds (63.6%) had heard of folic acid<sup>(11)</sup>. In this study, (31.7%) of participants knew that folic acid is a vitamin-B. Another study showed only (9.1%) knew that folic acid is one type of vitamin B<sup>(12)</sup>. The current study showed (54.5%) of participants thought vitamin B is important because of neural tube formation and brain and spinal cord growth, and women who knew folic acid deficiency

will lead to neural tube defects were (49.5%). Another study showed lower results, it was only (10.7%) who knew that folic acid could prevent spina bifida<sup>(11)</sup>. In the same context, another study showed higher results, and most of the participants (71.2%) knew properly that folic acid deficiency during pregnancy leads to neural tube defect<sup>(12)</sup>. Another study done in Nigeria, it showed about (26.9%) were aware of the role of folic acid in preventing NTDs<sup>(13)</sup>. In the current study, (58.4%) of participants took folic acid supplements during previous pregnancies. Another study done in Saudi Arabia showed higher results, and it was (63%) of the women who had taken folic acid in previous

pregnancies<sup>(14)</sup>. In this study, participants asked when to take folic acid for effective prevention of fetus malformations, (48.5%) answered 3 months before pregnancy and in first trimester. Another study showed that it should be taken before pregnancy (36.4%)<sup>(11)</sup>, and another one showed that (72.7%) knew the proper time for folic acid intake before and during the first trimester of pregnancy<sup>(12)</sup>. In our study, (63.4%) could identify the source of food rich in folate. Another study reported higher results (86%)<sup>(10)</sup>. In our study, most common sources of information about folic acid were from a doctor (49.5%), family member (24.8%), while the same previous study showed that the most common sources were doctors (44.4%), followed by self-cognition (21.5%)<sup>(10)</sup>.

A public health policy or strategy to increase the awareness and perception of the use of folic acid is needed in Saudi Arabia. Additional measures directed at understanding folic acid usefulness and promoting folic acid awareness and consumption among all childbearing Saudi women are warranted.

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